

# **TOOL SUSPENSION DEVICE**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The present invention relates to a tool suspension device, and more particularly to a tool suspension device that can be reused successively and repeatedly.

### **2. Description of the Related Art**

A conventional tool suspension device in accordance with the prior art shown in Fig. 1 comprises a main body 10, and a fastening strap 12 mounted on the main body 10 for positioning a ratchet wrench 14. Thus, the conventional tool suspension device is placed on a wall or a display board to facilitate the consumers inspecting the ratchet wrench 14.

However, it is necessary to cut off the fastening strap 12 to detach the ratchet wrench 14 from the main body 10. Thus, after the fastening strap 12 is cut off, the conventional tool suspension device cannot be used to hang and position the ratchet wrench 14 any more, thereby causing inconvenience to the user, and thereby limiting the versatility of the conventional tool suspension device.

## **SUMMARY OF THE INVENTION**

The present invention is to mitigate and/or obviate the disadvantage of the conventional tool suspension device.

1           The primary objective of the present invention is to provide a tool  
2 suspension device that can be reused successively and repeatedly.

3           Another objective of the present invention is to provide a tool  
4 suspension device, wherein the positioning ball is locked on the catch edge of  
5 the mounting hole of the main body, and the press member is retained by the  
6 retaining member, thereby forming a double locking state, so that the ratchet  
7 wrench is positioned on the main body of the tool suspension device rigidly  
8 and stably without detachment, thereby providing an anti-theft effect.

9           A further objective of the present invention is to provide a tool  
10 suspension device, wherein the ratchet wrench can be detached from the tool  
11 suspension device easily and conveniently, thereby facilitating the user using  
12 the ratchet wrench.

13           In accordance with the present invention, there is provided a tool  
14 suspension device, comprising:

15           a main body having a first side formed with a mounting hole and a  
16 second side provided with a mounting portion;

17           the mounting hole of the main body has a periphery formed with a  
18 catch edge; and

19           the mounting portion of the main body has an inside formed with a  
20 mounting space communicating with the mounting hole.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a perspective view of a conventional tool suspension device in accordance with the prior art;

Fig. 2 is a perspective view of a tool suspension device in accordance with the preferred embodiment of the present invention;

Fig. 3 is a perspective exploded view of the tool suspension device in accordance with the preferred embodiment of the present invention;

Fig. 4 is a perspective assembly view of the tool suspension device as shown in Fig. 3;

Fig. 5 is a partially cut-away side plan cross-sectional view of the tool suspension device as shown in Fig. 4;

Fig. 6 is a schematic operational view of the tool suspension device as shown in Fig. 5.

#### **DETAILED DESCRIPTION OF THE INVENTION**

Referring to the drawings and initially to Figs. 2-5, a tool suspension device in accordance with the preferred embodiment of the present invention comprises a main body 20 having a first side formed with a mounting hole 22 and a second side provided with a mounting portion 26 protruding outward therefrom. The mounting hole 22 of the main body 20 has a periphery formed

1 with a catch edge 24. The mounting portion 26 of the main body 20 has an  
2 inside formed with a mounting space 28 communicating with the mounting  
3 hole 22. Preferably, the mounting space 28 is directed in an axial direction of  
4 the mounting portion 26 of the main body 20.

5 The tool suspension device further comprises a retaining member 32  
6 mounted on an end face of the mounting portion 26 of the main body 20 and  
7 extended into the mounting space 28 of the mounting portion 26 of the main  
8 body 20. Preferably, the retaining member 32 is a screw.

9 In practice, a ratchet wrench 40 is mounted on the tool suspension  
10 device. The ratchet wrench 40 has a distal end provided with an operation stud  
11 44 mounted in the mounting hole 22 of the main body 20, a positioning ball 46  
12 movably mounted on and protruded outward from a side wall of the operation  
13 stud 44, a press member 42 movably mounted in the operation stud 44 and  
14 having a first end formed with a enlarged head 420 and a second end formed  
15 with a receiving recess 422 to receive the positioning ball 46, and an elastic  
16 member 43 urged between the operation stud 44 and the enlarged head 420 of  
17 the press member 42.

18 In assembly, the enlarged head 420 of the press member 42 is pressed  
19 by a force to move the press member 42 into the operation stud 44 until the  
20 receiving recess 422 of the press member 42 aligns with the positioning ball 46,  
21 so that the positioning ball 46 is received in the receiving recess 422 of the  
22 press member 42 and is retracted into the side wall of the operation stud 44.

1 Then, the operation stud 44 is inserted into the mounting hole 22 of the main  
2 body 20 and is received in the mounting space 28 of the mounting portion 26 of  
3 the main body 20. Then, after the force applied on the enlarged head 420 of the  
4 press member 42 is removed, the press member 42 is moved outward relative  
5 to the operation stud 44 by the restoring force of the elastic member 43, so that  
6 the positioning ball 46 is pressed and moved outward by the wall of the  
7 receiving recess 422 of the press member 42 to protrude outward from the side  
8 wall of the operation stud 44 and to abut the catch edge 24 of the mounting hole  
9 22 of the main body 20 as shown in Fig. 5, thereby forming a locking state by  
10 engagement of the positioning ball 46 with the catch edge 24 of the mounting  
11 hole 22 of the main body 20. Then, the retaining member 32 is secured on the  
12 end face of the mounting portion 26 of the main body 20 and is rested on the  
13 second end of the press member 42 to retain the press member 42, thereby  
14 forming a double locking state by engagement of the retaining member 32 with  
15 the press member 42, so that the press member 42 cannot be pressed and  
16 moved, and the positioning ball 46 will not detach from the catch edge 24 of  
17 the mounting hole 22 of the main body 20.

18 Accordingly, the positioning ball 46 is locked on the catch edge 24 of  
19 the mounting hole 22 of the main body 20, and the press member 42 is retained  
20 by the retaining member 32, thereby forming a double locking state, so that the  
21 ratchet wrench 40 is positioned on the main body 20 of the tool suspension

1 device rigidly and stably without detachment, thereby providing an anti-theft  
2 effect efficiently.

3 As shown in Fig. 6, the retaining member 32 is detached from the end  
4 face of the mounting portion 26 of the main body 20 to release the second end  
5 of the press member 42 from the retaining member 32, so that the enlarged  
6 head 420 of the press member 42 is pressed by a force to move the press  
7 member 42 into the operation stud 44 until the receiving recess 422 of the press  
8 member 42 aligns with the positioning ball 46, such that the positioning ball 46  
9 is received in the receiving recess 422 of the press member 42 and is retracted  
10 into the side wall of the operation stud 44. At this time, the positioning ball 46  
11 is detached from the catch edge 24 of the mounting hole 22 of the main body  
12 20, thereby forming an unlocking state, so that the operation stud 44 can be  
13 detached from the mounting hole 22 of the main body 20, thereby releasing the  
14 ratchet wrench 40 from the main body 20 of the tool suspension device easily  
15 and conveniently.

16 Although the invention has been explained in relation to its preferred  
17 embodiment(s) as mentioned above, it is to be understood that many other  
18 possible modifications and variations can be made without departing from the  
19 scope of the present invention. It is, therefore, contemplated that the appended  
20 claim or claims will cover such modifications and variations that fall within the  
21 true scope of the invention.